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GENERAL**1.1 SECTION INCLUDES**

- A. Clear span rigid frame metal building
- B. 175 ft. wide x 250 ft. long and a 17 ft. eave height.
- C. Bay spacing of 10 at 25 ft..
- D. Roof Slope: 2:12
- E. Primary Framing: Rigid frame of rafter beams and columns, end frames and end wall columns
- F. Secondary Framing: Purlins, girts, eave struts, flange bracing, per standard detail.
- G. Lateral Bracing: Horizontal loads not resisted by main frame action shall be resisted by portal frames in the fixed columns in the sidewall, and cables in the roof.
- h. Wall and Roof System: Preformed steel panels, insulation, and accessory components.
- I Accessories: Ventilators, Roof skylights, Anchor bolts, gutters and Down Spouts.
- J. 26 gauge Siliconized Polyester Coated metal gable wall panels.
- K. 26 gauge Galvalume metal roof panels.
- L. 26 gauge Gutters and Downspouts.
- M. Alternate #1. Concrete piers for the complete metal building.
- N. Alternate # 2., Erection of the steel buildin
- O. Alternate # 3., 175 Lin. ft. of Aluminum Bleachers.

1.2 RELATED SECTIONS

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- A. All Site work is by the owner (Union County Parks and Recreation Department).
- B. All Plumbing and electrical is by the owner (Union County Parks and Recreation Department).
- C. Arena fence by the owner (Union County Parks and Recreation Department).

1.3 REFERENCES

Listed or reference standards that are included within the text of this Specification. If a later addendum of these standards is available, this later addendum shall be a part of this specification.

- A. AISI - *Specification for the Design of Cold-Formed Steel Structural Members.*
- B. AISC - *Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design.*
- C. AISC - *Steel Design Guide Series 3 - Serviceability Design Considerations for Low-Rise Buildings.*
- D. ASTM A36 - *Specification for Carbon Structural Steel, 2000.*
- E. ASTM A123 - *Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products, 2000.*
- F. ASTM A153 - *Specification for Zinc Coating (Hot Dip) on Iron and steel Hardware, 2000.*
- G. ASTM A307 - *Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength, 2000.*
- H. ASTM A325 - *Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength, 2000.*
- I. ASTM A463 - *Specification for Steel Sheet, Aluminum-Coated, by the Hot-Dip Process, 2000.*
- J. ASTM A475 - *Specification for Zinc-Coated Steel Wire Strand.*
- K. ASTM A490 - *Specification for Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength, 2000.*
- L. ASTM A500 - *Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.*
- M. ASTM A501 - *Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.*
- N. ASTM A529 - *Specification for High-Strength Carbon-Manganese Steel of Structural Quality, 2000.*

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- O. ASTM A572 - Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel, 2000.
- P. ASTM A653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process, 2000.
- Q. ASTM A792 - Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- R. ASTM A1011 - Specification for Steel Sheet and Strip Hot Rolled Carbon, Structural High Strength Low-Alloy and High Strength Low-Alloy with Improved Formability, 2000.
- S. ASTM C665 - Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- T. ASTM D1494 - Test Method for Diffused Light Transmission Factor of Reinforced Plastic panels.
- U. ASTM E1514 - Specification for Structural Standing Seam Steel Roof panel Systems.
- V. ASTM E1592 - Test method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
- W. ASTM E1646 - Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
- X. ASTM E1680 - Test Method of Rate of Air Leakage through Exterior metal Roof Panel Systems.
- Y. AWS A2.4 - Standard Welding Symbols.
- Z. AWS D1.1 - Structural Welding Code - Steel, 2000.
- AA. AWS D1.3 - Structural Welding Code - Sheet Steel.
- BB. MBMA Metal Building Systems Manual, 2002.
- CC. NAIMA 202 - Standard for Flexible Fiberglass Insulation Systems in Metal Buildings, 2000.
- DD. SJI (Steel Joist Institute) - Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders, 40th Edition.
- EE. SSPC (Society for Protective Coatings) - SP-2 - Specification for Hand Tool Cleaning, 1995 (Part of Steel Structures Painting Manual, Vol. Two)
- FF. SSPC - Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; (Part of Steel Structures Painting Manual, Vol. Two)
- GG. SSPC - Paint 20 - Zinc-Rich Primers (Type I, "Inorganic", and Type II, "Organic"); Society for Protective Coatings; (Part of Steel Structures Painting Manual, Vol. Two).
- HH. UL 580 - Tests for Uplift Resistance of Roof Assemblies.

1.4 DESIGN REQUIREMENTS

- A. The building shall be designed by the Manufacturer as a complete system. Members and connections not indicated on the drawings shall be the

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Responsibility of the Manufacturer and/or Contractor. All components of the system shall be supplied or specified by the same manufacturer.

- B. Design Code:
Design load application shall be in accordance with IBC 2006 edition and all local building codes.
- C. Dead Loads:
The dead load shall be the weight of the Metal Building System and as determined by the system manufacturer.
- D. Collateral Loads:
The collateral load shall be 2 psf. Collateral Loads shall not be applied to the roof panels.

Collateral Loads consist of Sprinklers, Mechanical and Electrical Systems, and Ceilings.

- E. Live Loads:
The building system shall be capable of supporting a minimum uniform live load of 20 psf., reducible.
- F. Snow Loads:
The design ground snow loads shall be 10 psf.
- G. Wind Loads:
The design wind speed for the metal building system shall be 90mph.
- H. Seismic Loads:
Seismic load shall be determined based upon a seismic zone factor Z / Spectral response acceleration factors as required in Union county, Georgia with in the guide lines of the IBC 2006 building code.
- I. Rainfall Intensity:
All exterior gutters and downspouts shall be designed for rainfall intensity based upon a 5-year recurrence interval for five-minute duration.
- J. Deflection requirements shall be in accordance with the applicable Provisions of the AISC Steel Design Guide Series 3 – Serviceability Design Considerations for Low-Rise Buildings.

-OR-

- K. Deflections shall be limited as follows:
Primary Framing:
L/180 for roof snow load.

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H/60 for 10- year wind load.

Secondary Framing:

L/150 for roof dead load + roof snow load: but not less than that required to maintain positive drainage for the greater of dead load + $\frac{1}{2}$ roof snow load or dead load + 2 PSF.

L/120 for 10-year wind load on walls and roof.

L/180 for roof snow load.

1.5 SUBMITTALS

Note: All manufacture drawings and design calculations shall bear the professional seal and signature of a licensed professional engineer registered in the state of Georgia including the concrete Pier drawings to be supplied by the metal building manufacture.

- A. Submit anchor bolt placement plan, column reactions, and concrete pier foundation plan in advance of erection drawings.
- B. Product Data: Provide data on profiles, component dimensions, fasteners, color selections.
- C. Manufacturer's Installation Instructions: Indicate preparation requirements, assembly sequence, and standard detail sections.
- D. Shop or Erection Drawings: Indicate assembly dimensions, locations of structural members, connections, attachments, openings, cambers, loads, and wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation framing anchor bolt settings, sizes, and locations from datum, foundation loads and detailed concrete pier sizes. Indicate field welded connections with AWS A2.4 welding symbols; indicate net weld lengths.

1.6 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with MBMA Metal Building Systems Manual, and, for items not covered, AISC - Specification for Structural Steel Buildings.

1.7 QUALIFICATIONS

- A. Manufacturer: The Company manufacturing the products specified in this Section shall have a minimum of 10 years experience in the manufacture of steel building systems. The manufacturing company shall be certified

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under the American Institute of Steel Construction's Category MB Certification Program.

- B. Structural framing, Concrete foundation piers and covering shall be the design of a licensed Professional Engineer experienced in design of this work.
- C. Erector shall have specialized experience in the erection of steel building Systems for a period of at least 5 years.

1.8 FIELD MEASUREMENTS

- A. Metal building contractor or Sub-Contractor shall verify that field measurements are as indicated in contract on erection drawings, and the concrete foundation pier drawings as instructed by the metal building manufacturer.

1.9 WARRANTY

- A. Building manufacturer shall provide manufacturer's standard material warranty.
- B. Metal building erection contractor shall provide a workmanship warranty of 1 year.

1.10 ADMINISTRATION

- A. All nomenclature shall conform to the MBMA Metal Building Systems Manual.
- B. Coordination and administration of the work shall be in accordance with the MBMA Metal Building Systems Manual - Common Industry Practices.

PART 2 PRODUCTS

2.1 MATERIALS - ROOF SYSTEM

The following material listing is oriented to site assembled roof component assemblies. Manufacturer's standard fasteners must be compatible with panel material and performance level specified.

- A. Sheet Steel Stock: Galvanized coated AZ55 as required by manufacturer's design.

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- B. Roof Insulation: ASTM C553, roll glass fiber type, faced with reinforced white vinyl .UL flame spread classification of 25 or less where exposed, 3 inches thick (as shown in area on the drawings).
- C. Fastened Roofing: Minimum 26 gauge with a standard manufactured R profile, lapped with continuous sealant field applied, with a 36 inch total coverage and main rib's 1 ft. on center.
- D. Closures: Manufacturer's standard type, closed cell or metal.
- E. Fasteners: Manufacturer's standard type. Size and design to maintain load and weather tightness requirements. Fasteners to be head and shank carbon steel, self drilling and self tapping. Finish to match adjacent surfaces when exterior exposed.
- F. Sealant Manufacturer's standard type.
- G. Exterior surfaces of roof panels: Galvalume TM finish.
- H. Vinyl coated chicken wire for insulation support.

2.2 MATERIALS - WALL SYSTEMS

- A. Sheet Steel Stock: aluminum-zink coated to AZ55 as required by manufacturer's design.
- B. Fastened Siding: Minimum gauge 26 inch with a standard R profile having a 36 inch total coverage and main ribs 1 ft. on center.
- C. Closures: Manufacturer's standard type, closed cell or metal.
- D. Fasteners: Manufacturer's standard type. Size and design to maintain load and weather tightness requirements. Fasteners to be head and shank carbon steel plated self tapping and self drilling. Finish to match adjacent surfaces when exterior exposed.
- E. Exterior Surfaces of Wall Panels: Precoated steel of silicone polyester finish, color as selected from manufacturer's standard colors.
- F. Interior Surfaces of Wall Panels: Precoated steel with wash coat of silicone polyester manufacturer's standard finish.

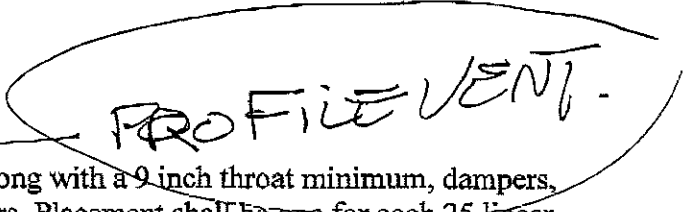
2.3 MATERIALS - TRIM

- A. Flashings, Internal and External Corners, Closure Pieces, Fascia, Infill's, Caps, Gutters and Downspouts. Same material and finish as adjacent material used in the wall panels profile to suit system formed as detailed. The color as selected from manufacturer's standard colors.

2.4 MATERIALS - TRANSLUCENT PANELS

- A. Translucent roof panels shall be white translucent panels capable of sustaining a 200 pound concentrated load on a one foot square located anywhere on the panel without rupture. Translucent panels shall be compatible with the steel roof panels. Panel shall be 8 oz. per square foot. The minimum variable light transmission shall be 60% when measured in accordance with ASTM D1494.

2.5 MATERIALS - ACCESSORIES

- A. Ventilator:  Shall be 10 ft. long with a 9 inch throat minimum, dampers, and standard chain operators. Placement shall be one for each 25 linear foot bay.
- B. skylights and Ridge vents shall be compatible with steel roof panel and sealed against water penetration in accordance with building manufacturer's instructions.

2.6 FABRICATION - PRIMARY FRAMING

- A. Framing Members: Clean and prepare in accordance with SSPC-SP2 as a minimum, and coat with the metal building manufacturer's standard primer.
- B. Hot rolled members shall be fabricated in accordance with AISC Specification for pipe, tube, and rolled structural shapes and primed with the metal building manufactures standard primer. Supplied unpainted.
- B. Fabricate built-up members in accordance with MBMA Metal Building Systems Manual, Common Industry Practices.

2.7 FABRICATION - SECONDARY

- A. Framing Members: Clean and prepare in accordance with SSPC-SP2, as a minimum, and coat with primer meeting SSPC No. 15 coat with building manufacturer's standard primer.
- B. Cold Formed Members: Cold formed structural shapes shall be fabricated in accordance with MBMA Metal Building Systems Manual, Common Industry Practices.

2.8 FABRICATION - GUTTERS, DOWNSPOUTS, FLASHINGS AND TRIM

- A. Fabricate gutters, flashings and trims from manufacturer's standard. Color to be selected from manufacturer's standard offering.
- B. Fabricate or furnish downspouts with elbows from manufacturer's standard. Color to be selected from manufacturer's standard offering.
- C. Form gutters and downspouts of profile and size indicated to collect and remove water. Fabricate with connection pieces.
- D. Form flashing and trim sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints.
- E. Fabricate or furnish gutter support straps of manufacturer's standard material, design and finish.
- F. Fabricate or furnish downspout clips or support straps of manufacturer's standard material. Finish color as selected.

EXECUTION

3.1 EXECUTION

- A. Verify site conditions.
- B. Verify that foundation pier, mechanical and electrical utilities, and placed anchors are in correct position and properly squared.
- C. Provide access to the work as scheduled for owner provided inspections, if required. The cost of any required inspections is the responsibility of the owner.

- D. Do not proceed until unsatisfactory conditions have been corrected.

3.2 ERECTION - FRAMING

- A. Erect framing in accordance with MBMA Metal Building Systems Manual, Common Industry Practices.
- B. Use templates for accurate setting of anchor bolts. Level bearing plate area with steel wedges or shims, and grout. Check all previously placed anchorages.
- C. Erect building frame true and level with vertical members plumb and bracing properly installed. Maintain structural stability of frame during erection.
- D. Ream holes requiring enlargement to admit bolts. Burned holes for bolted connections are permitted with written approval by designer. Burned holes to be reamed.
- E. Tighten bolts and nuts in accordance with "Specification for structural joints using ASTM A325 or A490 bolts" and using Turn-of-the-nut tightening may be used to assure correct tightening.
- F. The erector shall furnish temporary guys and bracing where needed for squaring, plumbing, and securing the structural framing against loads, such as wind loads acting on the exposed framing and seismic forces, as well as loads due to erection and erection operation, but not including loads resulting from the performance of work by others. Bracing furnished by the manufacturer for the metal building system cannot be assumed to be adequate during erection and are not to be used to pull frames into plumb condition.
The temporary guys, braces, false works and cribbing are the property of the erector, and the erector shall remove them immediately upon completion of erection.
- G. Do not field cut or modify structural members without approval of the metal building manufacturer.
- H. After erection, erector to prime welds, abrasions, and surfaces needing touch-up.

3.3 ERECTION - WALL AND ROOFING SYSTEMS

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- A. Install all wall and roofing systems in accordance with manufacturer's instructions and details.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, using proper fasteners aligned level and plumb.
- D. Set purlins and girts at right angle and bolt to appropriate clips. Attach to clips as required to satisfy design loads and as shown on drawings.
- E. Place screw down roof panels at right angle to purlins and girts. Attach and plumb wall panels as shown on drawings. Maintain consistent module coverage for entire length of wall. Lap panel ends minimum as per the manufacture's details. Place end laps over purlins or girts. Apply butyl roof panel side and end lap sealant between panel ends and side laps to provide water-tight installation per details furnished.
- F. Place profile vent at top of apex panel with the adhesive side against the panel on both sides of the ridge. Cover with the apex trim and fasten in accordance with the manufactures details.
- G. Stretch and fasten chicken wire on top of roof purlins in the area as shown on the drawings

3.4 ERECTION - GUTTER, DOWNSPOUT, FLASHINGS AND TRIM

- A. Install gutters and downspouts, flashings and trim in strict accordance with manufacturer's instructions, using proper sheet metal procedures.
- B. Install downspouts to utilize splash pads furnished by others.

3.5 ERECTION - TRANSLUCENT PANELS

- A. The translucent panels to be installed in accordance with manufacturer's instructions and details.
- B. To be coordinated with installation of roofing and wall systems and related flashings and trims.
- C. The installation to be made weather tight by referring to details.

3.6 INSTALLATION - ACCESSORIES

- A. Install Profile vent, Skylights, Gutters and Downspouts, and gable trim, in accordance with manufacturer's instructions.
- B. All roof and wall accessories to be installed weather tight.

3.7 TOLERANCES

- A. All work shall be performed by experienced workmen in a workmanlike manner to published tolerances.
- B. Install Framing in accordance with MBMA Metal Building Systems Manual, Common Industry Practices.

3.8 CONCRETE PIERS

- A. Concrete to be 3000 PSI strength at 28 days.
- B. The concrete foundation piers shall be in accordance with the metal Buildings manufactures supplied engineered sealed concrete pier Drawings
- C. Actual soil conditions during construction may result in design revisions. Concrete piers shown on the drawings are to be designed for an allowable soil bearing capacity of 2000 PSI unless instructed otherwise by the owner.
- D. the foundation design is based on proper construction methods being utilized for undercutting, backfill and compaction construction by the owner (Union County Parks and Recreation Department).
- E. All rebar shall be securely tied and held in place with a concrete protection to cover the rebar as shown on the concrete drawings.
- F. Anchor bolts shall be supplied by the metal building manufacture and Accurately set by the concrete foundation contractor to a tolerance of $\pm 1/16"$ within the group spacing for an individual column.
- G. Unless informed by the owner all embedded steel, anchor bolts, other materials and labor to construct the concrete piers labor shall be supplied by the foundation contractor.

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- H. All anchor bolts shall be as described in the foundation drawings and based on the manual of steel construction A.I.S.C.

3.9 ALUMINUM BLEACHERS

- A. Designed to be in accordance with the International Building Code (IBC) 2003 edition.
- B. Uniform loading – structural = 100 PSF. Seat and foot planks = 120 PLF.
- C. Sway Loads perpendicular to seats = 10 pounds per lineal foot.
Parallel to seats = 24 pounds per lineal foot.
- D. Basic design wind speed = 150 MPH (exposure B).
- E. Rail loads, Uniform vertical load = 100 pounds per lineal foot.
Horizontal load = 50 pounds per lineal foot Concentrated
Horizontal load = 200 lbs.
- F. All bleachers must be anchored to meet the wind loads specified as suggested by the bleacher manufacturers company.
- G. The site on which the bleachers are to be placed shall consist of a minimum soil bearing of 1,000 psf..
- H. Bleachers shall be anchored to resist overturning from wind forces and in compliance with any local codes.

4.0 BLEACHER SPECIFICATIONS

- A. **SCOPE:**
Provide new bleachers consisting of 1 such units rows high x 175 ft. in overall length, with the accessories as described below. Net seating capacity of (not including aisles based on 18" per seat).
- B. The understructure of each unit shall consist of a series of frames standard Dimensions are 8" rise per row, 17" height of seats above foot plank, and 24" depth of row. Frames shall be aluminum angle 6061 – T alloy (or mechanically equivalent). Vertical, Horizontal and diagonal bracing to support the seat and foot planks. All bracing is to be aluminum angle 6061T

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T6, (or mechanically equivalent) and placed in number and location to sustain design loads.

- C. Seat plank shall be aluminum, 2" x 10" with a wall thickness of .076. All seat Planks shall be of aluminum alloy 6063-T6 and have a clear anodic coating (204R1) applied in accordance with AAS standard AA-M10C22A31.
- D. Foot planks shall be aluminum non-skid surface 2" x 10" footrests shall consist of 2 such planks with a wall thickness of .078. All foot planks shall be of aluminum alloy 6063-T6 and be mill finish.
- E. Vertical riser planks shall be provided between seats and foot plank, planks Be (2) 1" x 6" at top row and 1" x 6" on all other rows with a wall thickness .078. All riser planks shall be aluminum alloy 6063-T6 and be mill finish. End caps shall be field installed using mechanical fasteners on all vertical risers.
- F. Aisle footboards shall be of all – aluminum. Two aisle stiffener angles shall be used to stiffen the aisle step.
- G. Guard railing shall consist of upright members of mill finish extruded Aluminum angle. Horizontal members shall be of extruded anodized aluminum tube 1-5/8" O.D. with a wall thickness of not less than .140 schedule 40 pipe. Rail pipe shall attach to upright members using 3/8 " diameter carriage bolts, lock washer and nuts with hot dipped galvanized finish. The guardrail system shall be a chain link system consisting of a 42" top rail height mesh chain link fabric, tension bars, brace bands, combo rail end caps and wire ties.
- H. All endcaps shall be extruded aluminum 6063-T6 alloy anodized coating and shall be field installed on the underneath side of each plank.
- I. Clip sets shall adequately connect and seal foot planks to the supporting structure so as to transmit all design loads to the understructure members, as specified in the design section. All planks will connect to the supporting structure using four-way adjustable clips, carriage bolts, and flange nuts.
- J. Splice connectors where required shall be two per joint and shall penetrate the joint a minimum of 8 " in each direction and be fastened at one end only to allow for contraction and expansion.
- K. Anchor bolts shall be 3/8" diameter x 2-3/4 ' long "wedge type" concrete anchor, with a minimum of 1-5/8" penetration in the concrete foundation. The load capacity shall have a tension capacity of 1,200 lbs. and a sheer Capacity of 1,300 lbs.. These loads are in accordance with ASTM standard E488, and in compliance with AISI, UL, FM, and ICBO.

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- L. The bleacher foundation and uplift anchoring system has been designed with With a minimum of 3500 p.s.i. concrete strength and is in compliance with ACI 318 and 301, specifications for structural concrete.
- M. The design minimum load requirements are as follows.

Bleacher system frames at 6'-0" o.c.

Bleacher frame total uniform loading D.L. + L.L. 770 plf (unfactored)

Bleacher frame wind uplift loading 250 plf (unfactored)

Seismic loading requirements per local requirement

3.8 ALTERNATES

- A. To construct all the necessary concrete piers in accordance with the metal Metal Buildings manufactures concrete foundation drawings.
- B. To erect the complete metal building package including the unloading of the building.
- C. To furnish 175 lin. ft. of bleachers.